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NEWCASTLE FARMER.

VOL. II.—NO. XI. COBOURG, JULY 1, 1848. THOS. PAGE,—EDITOR.

BLIGHTS OF THE WHEAT.

CHAPTER VI.

Before any description is given of wheat blights due to the agency of more perfect parasitic insects than the infusorial one last noticed, it will be expedient to point out the peculiarities of a most extraordinary abortion of the grain, which has been attributed to various causes. The diagrams will convey a correct idea of its appearance in rye and wheat. It is called *ergot*, which is French for *cock spur*, from its resemblance to the spur of the male domestic fowl. The ergotted grain is

Ergot of Wheat.

Ergot of Rye.

changed both in form and properties, and is one of the most wonderful monstrosities to be met with in nature. The altered grains elongate, turn black, and protrude in the manner shown in the figures, both of which are drawings of actual specimens. Ergot has been the subject of numerous speculations, and it has, by a singular mistake, been actually classed amongst the fungi, to which it bears no true resemblance whatever. A very superficial examination, in the present state of science, is enough to show that this is a great error. Some persons have imagined that it is caused by the puncture of an insect made for the purpose of laying its egg, such as is well known to be the case in certain remarkable excrescences on plants, of which oak apples, and nut-galls are common examples. By such punctures, morbid action is induced, and the results are the excrescences alluded to, some of which are articles of commercial importance and of great use to man. A certain fungus invariably accompanies ergot, and therefore it has been concluded by certain observers that it produces the disease. It is however quite as probable that the fungus is accidental to the ergot, as that the ergot is caused by the presence of the fungus. "Be the cause of its production," says professor Henslow, "what it may, the ergot is a monstrous state of the seed in which the embryo, and particularly one part of it, is preternaturally enlarged, protrudes beyond the chaff, and often assumes a curved form somewhat resembling a cock's spur, from whence the name "ergot," which is of French extraction. It is black superficially, and of a spongy texture internally, containing much oily matter, so that it will burn like an almond when lighted at a candle." Daniell, in his table of sugars and their congeners, says that a certain saccharine matter, which he calls "mushroom sugar," is derived from ergot, consisting of twelve equivalents of carbon, thirteen of hydrogen, and thirteen of oxygen. Another chemist announced that he had discovered in it a non-azotised vegetable substance, which he denominated *ergotine*. It is obtained in the state of a brown powder, of a pungent and bitter taste, and he looks upon it as the active principle. He says that it is narcotic and poisonous, but the composition and properties do not yet seem to be ascertained; and most probably, if it could be duly examined, it would turn out to be a mixture. Unquestionably ergot contains oily matter and a saccharine principle, and when taken into the system, its effects are extremely violent. The use of ergot of rye as a medicine, in peculiar cases, has long been well known to the faculty, and recently ergot of wheat has been found to be even more potent than the other. A high temperature, as is the case with most vegetable poisons, destroys its injurious properties, and the rapidity with which such substances become volatile, presents a serious obstacle to its being accurately examined in the laboratory of the chemist.

In certain places, ergot is extremely common in rye, and it is more so than has been suspected in wheat. It occurs in many grasses. In 1844 and 1845, it was abundant in the following grasses—*lolium perenne*, *lolium arvense*, *festuca pratensis*, *phleum pratense*, *dactylis glomerata*. In the *lolium* it was extremely abundant, so that the author can say, he scarcely examined a field either in the east or west of England, for he tried many in both, without speedily finding specimens. There are localities in which the ergot has not been seen at all in wheat, and we find botanists accordingly who state that they never met with it. But the same individuals would, perhaps, in other places, discover more than they wish to find. Professor Henslow desired his miller to search for him in two bushels of revet wheat, and he quickly produced three dozen specimens, and said there was as many more left in the sample. The author in 1844 suspected the existence of ergot in certain low lands in a village near Great Yarmouth, and requested the miller of the place to look into the corn when sent to be ground from one particular farmer, on a very small occupation near the marshes. The miller soon received from this place four bushels of wheat, and on searching found directly forty-eight specimens, which he brought to the author. The following season the author searched in a wheat field on the same little farm, and could not find any ergot in it; but gathered a large quantity in the grasses growing in the same district, in places where the drainage was bad.

The medicinal effects of ergot, in small doses, have already been noticed as being extremely powerful, but if taken to any extent, its results on the animal frame are truly awful. This has been proved by numerous experiments, of which professor Henslow gives a most striking account in his valuable notice of this disease; to which he adds a proper caution against their repetition now the question is settled. Animals which refused ergot mixed with their food have been compelled to swallow it, and it reduced them to a wretched condition. It was tried upon pigs, and also upon poultry, and the consequences were sickness, gangrene, and inflammatory action so intense, that the flesh actually sloughed away. In some cases, the limbs rotted off, and no description of animal suffering has ever exceeded the direful ills thus inflicted. These experiments were made with a view to determine whether the ergot of rye, constantly ground up with the flour in some parts of France, might not be the cause of the gangrenous diseases so prevalent amongst the poor in certain districts. The symptoms of these epidemic diseases are dreadful, and there seems to be very little doubt that the suspicions as to their originating from

ergotted flour of rye are correct. Tessier, who has paid great attention to the subject, mentions a case which came under his own observation. A family were in a state of great destitution, and the father begged of a neighbouring farmer a quantity of ergotted rye to supply the urgent calls of his distressed family for food. The farmer gave it him, but added that he was afraid it was not wholesome. Still the calls of hunger prevailed, and in the face of this caution it was eaten. The result was the death of the father, mother, and five of the children out of seven. Two survived, but one of them became subsequently deaf and dumb, and, besides, lost a limb which actually rotted off, precisely in the same way as the limbs of the animals which were compelled to swallow the experimental ergot. Professor Henslow has published a series of remarkable extracts from the parish register of Wattisham, in Suffolk, in the year 1762. It records the sufferings of several persons from an unusual species of mortification in the limbs, the symptoms of which were very similar to those of the people under the influence of ergotted rye in France. Indeed there seems a great probability that their maladies were due to the same cause, except that, in the Suffolk cases, the ergot was that of wheat instead of rye. Wherever it is perceived in samples of wheat it ought to be carefully picked out, and might be sold to medical men, since in judicious hands it may be applied medicinally with great success. But it should never be made use of, except when prescribed by those who are, from profession and practice, well aware of its properties, and skilled to apply them when required.

The whole range of our physiological knowledge does not afford a more wonderful instance of a natural chemical transmutation, under certain circumstances, than the present. By the agency of some unknown cause the nutritious corn is changed into an altered unsightly form, and endued with properties perfectly the reverse of its original wholesomeness.

It is more than probable that many disorders have been produced by this curious abortion, the origin of which has hitherto remained unsuspected. Let search be made for it in localities where gangrenous diseases of the limbs abound, with a view to prevention. Moreover, it is well worthy of the farmer's attention, inasmuch as his cattle may have suffered much from the same cause, when he has never even dreamed of its existence. The author knows, at this moment, of certain low meadows, where all the cattle that were turned into them at one time, were sure to be taken ill. They have been since judiciously drained, and in 1845 were searched in vain for ergot in the grasses. But in places adjacent the author gathered large quantities. These meadows now afford excellent food for the cattle, and no complaint appears as heretofore, when the occupant was actually afraid to turn any animal into them. Although this fact may not be perfectly decisive, it affords a strong presumption in favour of the idea that ergot did greatly tend to promote the evils complained of. A careful examination of the grasses growing near many hedge-rows, will enable an inquirer in the autumn to discover more ergot than he may imagine. In 1844 and 1845, there was a great deal to be found in such places; and it is notorious to numbers that pigs running about the lanes became diseased.

These inquiries are undoubtedly of great importance, and their value is further enhanced by the fact, that there is reason to believe that in some localities in France, where pains have been taken to prevent ergot being sent to the mill with the good rye, the epidemics formerly so prevalent have diminished. Indeed, it is said, that they have been nearly removed by this judicious care. It is to be hoped that this matter will receive more attention in parts of our own country, where morbid and unaccountable disorders prevail amongst the poor. Ergot is not unlikely to be the unsuspected source of much suffering hitherto baffling inquiry.

The specimens of ergot of rye drawn for this section, were gathered by the author in September, 1845, in a sort of peaty soil, with a stiff cold subsoil. The rye was late, and pretty nearly every other ear was more or less ergotted. In the previous September, he found exactly the same thing in the next field. The general opinion seems to be, that any wet hard land is suitable to its development. But the singular thing is, that so few people notice it. Threshers in barns will declare they never saw it, till it is pointed out to them. A farmer of great activity, eighty years of age, assured the author he had never seen it. He soon gathered a piece of ergotted rye-grass and showed it to the old man, who said, "Well, in all my life, I never saw such a thing before!" Indeed, by the men who work in our barns, it is probably often mistaken, when on the floor, for the dung of rats and mice, which it not a little resembles.

The prevalence of ergot in those fields where the drainage is imperfect, and its disappearance from such as have been thoroughly well drained, seems to point to this as its chief preventive. After searching in vain over a large well-farmed parish for ergot in wheat, during the autumn of 1844, the author requested a small farmer to look over some that was grown on a wet clayey spot close to a ditch adjoining a marsh. He was soon presented with three or four specimens from the suspected place, one or two of which had the chaff scales still adhering to them. This seems to confirm the supposition as to its favourite localities, and at once to suggest the best method of getting rid of it. Professor Henslow appears to be of the same opinion, and hints that when ergot is wanted for medicinal objects, it might probably be always obtained if grown where such conditions of soil present themselves.

The fungus, before said to accompany the disease, and to which it has been attributed, is called *ergotetia*. The mere fact, however, of coincidence, does not prove cause and effect. It has a nasty smutty appearance, and the author has seen the *cladosporium herbarum*, previously noticed, growing with it on the chaff scales of the ergotted ears of rye. Such a transmutation of nutritious bread-corn into a violent poison, cannot fail to remind the reflecting reader, that the scriptural statement of the word of truth—the seed of eternal life, becoming a "savour of death unto death," instead of "a savour of life unto life,"—has a striking analogy in this extraordinary natural phenomenon.

THE CULTURE OF THE TURNIP.

BY MR. A. S. MOFFAT.

The third head leads us to consider the inorganic constitution of the turnip, and some of the manures generally employed, as regards their capability of contributing to the wants of the plant, and maintaining the permanent fertility of the soil. The following table is so arranged as to exhibit side by side, the quantity of inorganic constituents required by 24 tons of entire turnips, roots, and shaws, calculated from the average of the most recent investigations of Professor Way, of Cirencester. I have assumed 20 tons of roots per acre, and the quantity of shaws upon the 20 tons to be 4 tons, which is rather within than beyond an average crop—the quantity of each substance, that an acre of the soil, whose composition I stated at the beginning of this paper, can furnish without manure, assuming that the depth from which the fibres of the turnip derive their chief support is usually seven inches, which depth over an acre of land will weigh somewhere about 700 tons. The average quantity of mineral matters contained in 15 tons of fully rotten farm-yard dung is also given, along with those furnished by 4 cwt. of ordinary guano, which is rather an extra dose.

	24 Tons of Turnips.	An acre of Soil.	15 Tons farm dung.	4 cwt. of Guano.
	lbs.		lbs	
Silica	13.2	550. tons.	2,473.4	7.02
Phosphoric acid	45.6	439. lbs.	108.19	67.14
Sulphuric acid.....	60.24	Trace.	58.0	16.38
Lime.....	90 24	5 2 tons.	214.0	53.87
Magnesia.....	14.6	560. lbs.	17.36	3.6
Peroxide of iron	4.32	32.9 tons.	29.76	..
Potash	147.41	Trace.	103.0	20.11
Soda.....	59.87	Trace.	46.8	0 25
Chlorine	35.53	Trace.	22.63	7.87
Total	470.57	....	3.075.14	176.24

Now it will be observed from this table, that the turnip is a plant which draws a large amount of mineral matters from the

soil or manure—that the soil, whose composition I have here stated again, for the sake of illustration, is essentially deficient in regard to four very important agents, viz., potash, soda, sulphuric acid, and chlorine, but containing a super abundance of all the other ingredients required by 24 tons of turnips; that 15 tons of well-prepared farm-yard dung, can furnish a considerable excess of all these constituents, with the exception of 2 lbs. of sulphuric acid, 44 lbs. of potash, 11 lbs. of soda, and 13 lbs. of chlorine; and that consequently in sufficient quantity, it is eminently qualified not only to comply with all the wants of the crop, and the deficiencies of the soil, but to contribute so largely towards it from its own resources, as to leave the soil comparatively unscathed, and replete with all the materials of future crops, with but the trifling exceptions above enumerated. But not so the guano: in it, we notice a large deficiency of all those constituents, which constitute the perfection of farm-yard dung as a manure for turnips, amounting to 6¼ lbs. of silica, 44 lbs. sulphuric acid, 36½ lbs. of lime, 10½ lbs. of magnesia, 127¼ lbs. of potash, 59½ lbs. of soda, and 27½ lbs. of chlorine, less than what is required by a moderate crop of turnips, and denoting it a vastly inferior application to farm-yard dung, as regards the permanent fertility of the soil. It will be seen by referring to the above table, that the soil, whose composition is there given, contains an almost inappreciable quantity of potash, soda, chlorine and sulphuric acid, and that 24 tons of turnips require 303 lbs. of these bodies, while 3 cwt. of guano, which is a large dose, can only furnish little more than 44½ lbs. To what an inconsiderable extent, then, guano is capable of counteracting the poverty of such a soil, will be sufficiently apparent, as the very constituents of which the soil is most in want, exist also in least abundance in guano. And in the event of that soil being called upon to produce a crop of turnips, having guano applied to it as a manure, how is this deficiency in both to act upon the crop? And there are many soils in the turnip districts, upon the sandstone formation, not better supplied with these ingredients than the one in question. Certain it is, that the rains may convey a very small portion of the alkaline salts to the soil; even snow-water is rendered a little turbid by the addition of a few drops of the nitrate of silver to it, which indicates the presence of a chloride. The supply derived from this source, together with that obtained from the gradual disintegration of the undecomposed parts of the soil, will certainly assist the quantity furnished by the guano, but still a large deficiency must exist; and so soon as the whole available supply of these matters is appropriated by the turnip, the farther formation of these proximate principles which require their presence, will be immediately arrested; and either a plant of an unhealthy and inferior quality be produced, or the growth of the plant must entirely cease; although other constituents may be present in quantity sufficient to produce double the weight of the crop. In support of this opinion, I beg to refer to the table exhibiting the difference of constitution between turnips produced from farm-yard dung, and guano; those produced from the latter, contain eight per cent. of water more than the former, and otherwise are of considerably less value, as regards their adaptation for the food of animals, even supposing that their bulk per acre is equal to that of the former. The oil, gum, sugar, and albumen, amounting to above seven per cent. in those produced from dung, while they only amount to two-and-a-half per cent. from guano. Now the reason is obvious why the produce raised from it should be inferior to that produced from farm-yard manure, as it will be seen by a reference to the table shortly given, that it is capable of furnishing a much less quantity of those mineral constituents upon which the healthy development of the nutritive principles depend. But this inferiority in quality, I conceive, will exist to a greater extent where the guano has been applied to poor soils naturally deficient in such bodies as potash, soda, &c., than in the case of richer lands, fertile with such constituents. In regard to the influence of guano on the permanent fertility of the soil, the large quantity of ammonia which guano is able to afford constitutes its chief value as a manure, to which the rapid and luxuriant growth of turnips produced from it, in the early part of the season, is to be ascribed, and on this account it is believed by many experienced Agriculturists, to be the best manure that can be applied; and it cannot be denied, but that we have frequently seen as abundant crops raised from it, as from any other application. But the fact is generally forgotten, that its efficacy depends almost entirely upon the stimulating action of its ammonia; and, as before explained, the larger the supply of this ingredient, the greater will be the quantity of mineral constituents appropriated by the turnips; and as the guano can only furnish a trifling amount of them, it is obvious that the exhaustion of the soil of these ingredients will only be the more extensive, in proportion to the large quantity of ammonia furnished. And it is my opinion, that if successive crops of turnips be raised from guano or bones alone, upon poor lands, and be drawn off the soil to be consumed elsewhere, such soils will become so exhausted of the alkalies and others, that they will eventually refuse to produce any crop at all. But the case is to a considerable extent altered when they are consumed on the land by sheep, as then the greater part of the saline matters obtained from the soil by the crop is returned again to it, with the exception of part of the phosphates, which are retained by young stock, in order to build up the structure of their bones. As an evidence of the tendency of such manures as guano, bone dust, &c., to exhaust the soil of the alkalies, and other constituents not furnished by them in sufficient abundance, I beg to refer to the soil whose chemical constitution is detailed in this paper, and which we observed to exhibit a marked deficiency of these bodies. Now this will not appear so strange, when I state, that three or four successive crops of turnips have been produced from it, at intervals of four years, with bone dust alone as a manure; and that fully one-half of the produce was, in each case, drawn off the land, to be consumed by cattle; which we see, in this case at least, to have had precisely such an effect in exhausting the soil as might have been anticipated. It is also a fact worthy of record in this age of guano, that it is ascertained to have been used by the natives of South America, long previous to its ever being thought of by the Farmers of England, and that the lands of a monastery belonging to the Spaniards, had been manured with it for a number of years in succession. At first they obtained large crops, but eventually they were observed to become less luxuriant year after year, until at last they were too insignificant to repay the expenses of cultivation, when the lands were left untilled, and may even be so at this day. Now the gradual, and ultimately complete, deterioration of these lands, can be ascribed to no other cause than the tendency of guano to rob the soil of its alkalies, and other inorganic constituents, as I have before explained. It might be considered a matter easily accomplished, to add such artificial preparations to guano or bone dust, as would render them at once replete with all the materials required by a crop of turnips. For instance, were we to add to the usual quantity of guano or bones 1 cwt. of pearl ash, 4 stones of Epsom salts, and 3 cwt. of common salt, we would supply in abundance most of the ingredients required; and, in a dry season, this addition might be attended with manifest advantage; but owing to their ready solubility in those forms, the first heavy rain that fell would wash the greater part of them into the rivers, so as to be totally lost. And this opinion of the fleeting action of manures in too soluble a form, is strongly corroborated by what I have mentioned, as having been the effects of the continued rains on the turnip crops of 1845, in a former part of this paper. Therefore, the grand point to be attained in the application of all substances as manures, is to apply them in such a form as to be gradually rendered soluble, and as they can be appropriated by plants, so as to guard against their being washed out of the soil on the one hand, or being rendered useless by their insolubility on the other. And such a medium I conceive to be eminently attained in fully rotten farm-yard dung; for by the gradual decomposition of the fibrous part of the straw in the soil, the inorganic matters which chiefly reside there are set free, just in such quantity as is required for the present use of the crop; while any waste is effectually obviated by the complete insolubility of such parts of the fibre as are not yet entirely decom-

posed. I need scarcely remark on the utility of so preparing the dung, previous to its application, as to be in such an advanced stage of decomposition, as to give off the whole of its constituents in sufficient time to meet the wants of the turnip during the short period of its growth. So well aware of the utility of this are most of the Farmers in the Lothians of Scotland, and many in Northumberland, that they apply the dung to their land in the autumn previous to sowing the turnips, in order that it may have sufficient time to become entirely decomposed in the soil, and ready to impart its constituents to the turnips, when required. But to this method I object, on the ground that during the winter almost the whole of the ammonia formed, as well as part of the most soluble mineral constituents, will be washed away by the rains, and consequently lost to the crops, unless it is applied almost in the state of straw, in which case it is so bulky, that a sufficient quantity, equal to a proper dose of rotten manure, cannot without difficulty be buried in the soil by the plough. I have enlarged, I fear, upon this part of the subject to such an extent as to be considered tiresome. But the subject is an important one, and the possession of such information as will enable us to apply such manures to the turnip, as will not only contribute to all the wants of the plant so as to produce an abundant crop, but also in such a manner as to leave the soil comparatively unexhausted for the production of succeeding crops, is one of the most important matters connected with its culture; and it must also be taken into consideration, that in most cases, from the manures applied to the turnip crop, the soil is expected to become replenished with all the materials required by the rotation following; therefore, on the proper culture of this crop, in that respect, the success of the whole succeeding crops depend.

I will now take leave of this part of the subject, by recommending farm-yard manure as in every respect the best application that can be used for the turnip, in order to comply with the various requirements of the crop and the soil: that where, as is often the case, a sufficiency cannot be obtained to extend over the whole breadth of land sown, one-half the usual quantity, or about twelve cart-loads per acre, be applied along with 2 cwt. of guano; and that in this case, at least one-half the produce be consumed on the land with sheep, by which a very considerable portion of the mineral matters will be again returned to the soil, in a form well calculated to be of immediate use to the succeeding crop. Bones, either simple or prepared, may be substituted for guano, but I do not think with advantage to the soil. Those dissolved in sulphuric acid are decidedly a cheaper application than simple bones, as by the ready solubility of the superphosphate of lime, a much less quantity will produce as large a crop: but it must not be expected that they will leave in the soil so large a portion of phosphates for the succeeding crops.

Having now glanced over facts connected with the scientific part of this subject, I will just allude to one or two important particulars connected with the practical part of the subject. In the first place, I would beg to direct your attention to the importance of exposing the soil intended for turnips, as much as possible to the winter's frost, in order that the eggs and larvæ of insects, and the seeds of noxious weeds, may be destroyed. Besides, frost is one of the most powerful agents in nature in effecting the disintergration of the larger particles of soils, and rendering their constituents free to contribute to the wants of vegetation; and, in my opinion, a full exposition of the soil to the atmosphere in winter is of much greater benefit to it in this respect, than all the summer working we bestow. This the best Farmers in our district effect, by ploughing the land as soon after the conclusion of harvest as convenient, and then set it up in deep and narrow drills; and these they frequently split down again towards the spring, when the weather will permit, so as to expose a fresh surface to the atmosphere.—This system I deem excellent, where the soil is sufficiently dry to admit of it; but upon wet or tenaceous lands, it cannot be pursued with advantage. The next thing is the use of lime, in restraining the ravages of that greatest pest to the light-land Farmer, the turnip grub. Into the nature or causes of this disease in the plant, it is not my intention at present to enter; and whether it is produced by operations of insects, or by the presence of some noxious matters in the soil, is not to my knowledge yet satisfactorily settled,—for my own part, I am inclined to the latter opinion; but be the cause what it may, I am convinced, not only by my own experience, but from the experience of others, that lime properly applied and in sufficient quantity, is the only sufficient remedy. I have this season seen a very remarkable instance of the kind, in a large field of turnips which was limed in the autumn—with the exception of about two acres in the centre, not a single diseased plant could be detected upon the limed parts; while on the two acres unlimed, nearly every turnip was in a state of decomposition from the grub. I might multiply instances of a similar nature, but I consider my time will be better occupied in offering a few remarks on the best manner of applying the lime in order to effect this object, and as an illustration of what is meant, I will detail my own practice on this point. As soon after the conclusion of harvest as is convenient, I cause such fields as are intended to be limed, to be as deeply ploughed with three-horse ploughs as the staple of the soil will permit. On the surface of the ploughed land, the lime is applied from a large heap, in an eminently caustic and impalpable powder, and completely incorporated with the soil by the use of the harrow: the land is then set up in deep and narrow drills, in a direction generally contrary to that in which it was ploughed, to lay over the winter, if dry enough to admit of it; but if the soil is of a wet or tenacious quality, it is again lightly ploughed up in fifteen-feet ridges to remain during winter. By the above method I think the full action of the lime and frost combined, are insured as far as practicable. It is the practice of many to apply the lime to the surface of the oat stubble previous to its being ploughed, but I do not esteem this a good practice, as the lime is laid by the plough in almost vertical and isolated stratas in the soil, and in place of being generally intermixed with it, a comparatively small portion of the soil ever comes in contact with the lime until the succeeding summer's working, when it will be found to have completely lost its causticity, and consequently, be of little further use as a corrective to the soil. As an experiment, a year or two ago, two fields in my own farm were very much addicted to grubs, and the same quantity of lime was applied to both in the autumn. On the one, the lime was applied in the manner recommended, and not a single diseased turnip could be found in the field; while on the other, it was applied to the surface of the stubble, which was merely afterwards ploughed in fifteen-feet ridges to lay over winter; and in this case, I could not discover that the ravages of the grub were in any considerable degree mitigated: thus speaking volumes in favour of the former plan. Many other considerations connected with this almost inexhaustible subject suggest themselves to me, but time forbids my mentioning them. Merely to enumerate the names of the host of artificial fertilisers for the turnips, with which the columns of the newspapers weekly teem, would be the work of a considerable time, without at all entering into a review of their merits. In conclusion: I am well aware that a diversity of opinion will exist upon several matters stated in this paper; more especially in regard to that part of it which treats of the tendency of the artificial applications, guano, bones, &c., to exhaust the soil of its inorganic constituents; as it will doubtless be contended by many, and perhaps justly, that they have succeeded in raising as large crops of turnips from these manures as from farm-yard dung or any other. But I would tell those individuals, that there are other two matters to be considered in estimating the value of any manure whatever, of equal importance to the bulk of the crop produced from them, viz., its quality, and the tendency of the manure to contribute towards the exhaustion, or the permanent fertility of the soil. And if it is considered that, by fair reasoning, founded upon ascertained facts, I have proved the tendency of some applications to be towards the production of plants of an inferior quality, as well as the permanent exhaustion of the soil, as regards certain inorganic constituents essential to vegetation. I think the correctness of my assertions on this point must be admitted.

DISCUSSION ON DRAINING.

At a Meeting of the Union Agricultural Society at Coldstream—

Mr. MILNE said it so happened that during the additional half hour they had obtained, a parcel had made its appearance: and in connection with it he would now beg leave to propose as a toast, "deep draining." There were many gentlemen who, he believed, had great doubts on that subject; and it occurred to him that such meetings as these might be advantageously occupied in discussing such topics. In the small club to which allusion had already been made, they held discussions of this kind; the last, for instance, was on subsoil ploughing, and the next would be on draining. These were topics that brought 50 or 60 persons together, and afforded room not merely for complimentary speeches, but for deriving solid information. During the course of the day he had received a letter from Edinburgh, intimating that this apparatus they now saw was to come here. It had been noticed already in the newspapers, without his being aware of it, he having mentioned it to Mr. Donaldson Selby in the course of a conversation on the quantity of water likely to be discharged by deep or shallow drains. This was an instrument not exactly according to the plan he gave, but of a simpler character, and not quite so accurate. By their leave he would show them the principle upon which it was framed. Mr. Milne then proceeded to describe the apparatus, which consisted of a wooden box, to be placed at the mouth of the drain, the water from which, entering the box by a funnel at the top, passed into one of the two compartments of a tin or metal receiver. The receiver was so constructed and fixed upon an axle, that when one of its compartments became filled, it fell down with the weight of the water and emptied itself, at the same time lifting up the other compartment to take its place under the funnel; and this again becoming filled, fell, emptied itself, and lifted up its neighbour; and thus the process went on. Connected with this movement was a cog-wheel and rack, which moved one tooth with every discharge of the receiver, and by this means an index was obtained; the apparatus could thus be left at the mouth of the drain for weeks or months, and on opening it, the quantity of water discharged from the drain during that time would be found duly registered on the index. Mr. Milne then proceeded to describe some arrangements of drains for applying this apparatus, in order to ascertain the quantity of water discharged from shallow as compared with deep drains. He had a twenty acre field drained in two sets —one part 3 feet deep, 15 feet apart; and the other part 3½ feet deep, 30 feet apart. Each set of drains discharged into one mouth, and at each mouth he should place an instrument of this description. Hitherto this matter had been altogether conjecture. They had nothing but opinion upon it, and no facts. He wrote to Parker and Smith, and some other agricultural engineers, and they informed him that there was no such instrument for testing the point; and accordingly he had been occupying himself for the last six months to find out some such instrument. He had his own opinion on the subject, as they would understand by his proposing "deep draining" as a toast; and he merely proposed to them a simple instrument by which that point could be ascertained. (Applause.) It had always appeared to him that the only test by which they could come to a certain knowledge as to what was the proper depth of drains, was the depth to which plants would throw down their roots in the soil—the depth of soil from which plants will, by their nature, seek nourishment. If it be found that a particular crop never by possibility goes lower than 2½ feet, one did not well see the necessity of making the ground dry to a lower depth; but if by draining to a lower depth, common crops will throw down their roots deeper, that would afford greater nourishment and greater power of growth. That was one important element which should be attended to in draining. Let botanists tell us to what depth these roots will go; and if to three or four feet, then they ought to make their land capable of giving nourishment to that depth by means of draining. That was an element which went far to settle this question. For example, flax was well known to go down thirty inches, the roots of turnips went sometimes even deeper, and even the roots of wheat to a very considerable depth. An experiment he had tried, which confirmed his view of deep draining. He drained three parts of a field in three different ways. Mr. Milne mentioned the depths and distances of the three kinds of drains. The result was that the field of oats produced one-fourth more on the deep drained, than on the shallow drained part. He might be right, or he might be wrong; but he mentioned the circumstance as having operated on his mind. The Chairman agreed with him as to the advantage of deep drains; and he would perhaps give them his views on the point.

The CHAIRMAN said they would all agree how much they were indebted to Mr. Milne for the introduction of this important subject. He entirely agreed with him that if such discussions were usual in meetings of this kind, it would give a much greater importance and interest to them than hitherto, because, although it was extremely pleasant to meet with friends at the festive boards, complimentary speeches were not half so valuable as discussions like this. It happened that, like Mr. Milne, he had the honour of being President of a Farmers' Club—the "Tyneside." Nearly a year ago he was requested by the members of that Club to address them upon this subject; and after the delivery of his own sentiments a discussion took place, in which the question of the depth to which plants will penetrate the soil when not prevented by water or the coldness of the soil was considered. That address was afterwards published; and if he had a copy he would be extremely happy to send it to Mr. Milne, because it would bear him out in the estimate he had formed as to deep and shallow draining. No doubt many advantages had arisen from two feet drains, but they had not been compared with the advantages arising from drains of a greater depth. Here was a test of comparison produced by Mr. Milne. But they had seen comparisons of other kinds. He had seen them in ways sufficiently satisfactory to himself, to make him deem it more safe to drain at four than at two feet depth, and brought him to this conclusion, that he would pay for no drains which were less than three feet deep. They were not draining for two or three years, but for a permanent benefit, and therefore they should take the safe course. Mr. Milne had adverted to the depth to which the roots of plants would penetrate. The late Bishop of Durham, Dr. Barrington, who was curious in such matters, made an observation on this point of considerable interest. It was found that the roots of some wheat at Bamburgh Castle penetrated to the depth of six or seven feet below the surface of the soil. He did not say that it was necessary they should go that deep with the drains; yet if the roots had power to go so deep, they could not do better than afford them the opportunity of getting their nourishment from as great a depth as possible; and to whatever depth they withdrew the water, to that depth they were affording the roots of plants the opportunity of obtaining nourishment, and affording also to that depth access to the atmospheric air, the constituents of which contributed greatly to the fertility of the soil. There were cases in which draining might not be required to be so deep, but he remembered an instance of a field having been drained with two feet drains without effecting the benefit expected from it. It was then determined to cut four feet drains at intervals between each two of the two feet ones, and this was done. He was staying with the proprietor. It had been raining heavily the whole night, and it being suggested in the morning that this would be a good opportunity to examine the drains, they accordingly went, when they found the four feet drains venting all the water, and quite clear, while the shallow drains were throwing off a very small quantity, perfectly turbid. The first direction which agricultural improvement must now take, generally speaking, in this country, was draining. No benefit could be derived from wet land, until they had first carried off the surplus water, which not only prevented the roots from penetrating, but kept the land cold. Evaporation was always going on on wet lands; the greatest cold was produced by evaporation, and that cold was pernicious to the crops.

From the Albany Cultivator.

"RUNNING OUT OF VARIETIES."

Under this head we published a communication in our March number from H. A. Parsons, Esq. Without intending to enter at this time into a detailed discussion of the subject, we think it proper to state a few of the reasons why we dissent from some of Mr. P.'s conclusions.

He is mistaken in supposing we had expressed the opinion that plants, under any circumstances, "do not degenerate." This is not our position; but we hold that plants have no *natural* tendency to degeneration. Mr. P. on the other hand, if we understand him, believes that all plants have an *inherent* tendency of this kind—that degeneracy results from an original, or constitutional principle. He thinks "the science of botany and vegetable physiology," prove that any plant continued from "the same seed on the same soil," will "degenerate till it becomes extinct."

That degeneracy may follow from growing a plant "from the same seed on the same soil," is not improbable; but does this consequence ensue from the natural decline of the species or variety to which the plant belongs, or from the exhaustion of the soil and unfavourable external influences? *This is the question.*

Let it be remembered that every plant requires its specific food; and that each successive crop, or generation of the same kind of plant, takes something from the soil. Hence it necessarily follows that this loss must be supplied, or exhaustion will follow; and as the food required by the plant is lessened, it is evident that the amount of produce will be lessened in a corresponding ratio. But is it proper to say that a decline of this kind, is the result of any law of "botany or vegetable physiology?" But though Mr. Parsons has told us that such a law exists, he has not told *what* it is, or where it may be found, as expressed or understood by those who believe in its validity.

It will be observed that the theory advocated by Mr. Parsons applies to "*any* plant," including not only those which are propagated by buds, bulbs, or tubers, but all others, whatever may be their mode of reproduction. But without any reference to the persons who have given credence to this theory, let us ask, is it sustained by facts? Is there anything within our knowledge connected with the cultivation or growth of grains, fruits or vegetables, which can constitute a basis for such a theory? Take wheat, for example. Some of the varieties held in highest estimation, are known to have been cultivated in the district where they are now found, for several centuries; and a variety cultivated in Egypt, (the *Triticum compositum*) has been grown on the banks of the Nile for more than *three thousand* years. There are several facts that establish this conclusion; but the following may be taken as a *demonstration*: The ancient people of that country, sometimes placed small quantities of wheat in the enbalmed bodies of their dead. In several instances wheat has been taken from mummies, which, from hieroglyphical records connected with them, were known to have been interred for the long period mentioned; and this wheat on being sown has vegetated, and been found to be identically the same kind as that grown in Egypt at the present day! How long a time is required for this kind of plant, "grown from the same seed on the same soil," to "become extinct?"

But Mr. Knight believed that some old kinds of pears and apples had become unprofitable on account of their constitutional decline. Were he now alive, he would have sufficient evidence that his theory would not apply to the kinds mentioned by him. The Autumn Bergamot is said to be the oldest variety of pear known, having been cultivated by the Romans two thousand years ago. Mr. Knight thought it was about to become extinct. In France and other parts of Europe it now does well, and in this country, according to Downing, it grows vigorously, and bears good crops. The Brown Beurre, St. Germain, Chaumonetelle, and White Doyenne, (Virgalieu or St. Michael,) ar all old kinds—some of them have been known for two hundred years—yet all produce well, in good soils, in this country, and are said to produce better in France than they did several years ago. The white Doyenne, which from having failed around Boston, was taken by some as an evidence in support of Mr. Knight's theory, is considered in the Genesee valley (according to a statement of J. J. Thomas, in the March number of the Horticulturist.) one of the most productive, hardy and healthy varieties there known.

Of apples, the Golden Pippin and Nonpareil are very old sorts, and were supposed by Knight to have "run out."—The former has been cultivated for nearly two hundred years. It is well known that these kinds flourish well on proper soils in this country. We have seen the fruit of both varieties in the highest perfection; and even in England the failure in Mr. Knight's time was only partial, and by improved cultivation the former productiveness of the kinds has there been restored.

Take an example of another kind:—The common variety of red current has been propagated by buds or scions from a time the memory of man goeth not beyond; and the same is true of several kinds of grapes, and also of roses. Have they any less constitutional vigor now, than at the earliest period of which we have any account of them? Where they are put on proper soil and receive proper training, they flourish well. How much longer must this system of propagation be continued, before the varieties will "become extinct?"

Mr. Parsons refers to the potato. He thinks the natural tendency of varieties to wear out, has already exterminated many, and that others are fast failing from the same cause. The non-production of balls he regards as an evidence of decline in constitutional vigor. Our observation would not justify this conclusion. Some of the strongest-growing and most productive kinds have never been much inclined to produce balls, (or seed.) This fact is well known, and the idea has been taken from it, that it is an advantage to pinch off the blossoms from those kinds which produce them, in order to prevent the energies of the plant from being exhausted by the production of seed, and throw more force into the production of tubers. This course has been considerably practiced in England. The Merino or Long-Red, an old variety introduced from South America about fifty years ago, has never produced but few balls, and its vigor and productiveness is remarkable; whereas the Mercer or Neshannook, a kind originated in Pennsylvania at a comparatively late period, and generally spoken of as particularly susceptible to disease, produces plenty of balls. A person in this vicinity has raised potatoes from the balls of this kind for two years in succession, and they have all been diseased. Prof. Norton informs us that in Scotland the "cups," and those "*kinds which bear no apples; are in general least affected*" with the disease.

The decrease of the potato crop from 1843 to 1846, is supposed by Mr. Parsons to result from "a general degeneracy of the varieties now in use." Everybody knows the deficiency in this crop is chiefly caused by the "potato disease;" and the unavoidable inference, therefore, from Mr. P.'s language, is that the *disease* is the result of constitutional degeneracy, and that on this account the old kinds should be replaced by new ones, raised from seed. But does his own reasoning bear out the proposition? He cites the practice of farmers in Nova Scotia, "where," says he, "the finest potatoes were formerly grown." "They [the farmers of Nova Scotia] place little reliance on the introduction of tubers from abroad; their experience tells them that a reproduction from the seed-balls is the most sure and profitable. *And in no part of the world, probably, has reproduction been resorted to oftener than there.*" We have italicised the words composing the last sentence, because we wish that they should be particularly observed in connection with the FACT, (which we derive from a comparison of various accounts given,) *that in no part of this country has the potato suffered more from disease than in* Nova Scotia! This is a sufficient comment on this point.

Again, if the disease was the result of constitutional weakness should we not see evidence of such weakness in a feeble growth of the plant from the start? But instead of this it is certain that potatoes were never known to grow

more vigorously, or present generally a finer appearance in their earlier stages, than in the season in which the disease has prevailed. The flourishing condition of the crop last season, up to the time when the blight of the tops first appeared, was the subject of general remark; and the growth of tubers was in most cases more than commonly great; but, with the exception of a few varieties, which from their hardiness were in a measure exempted from attack, those which the disease found in an *unripened state*, perished. According to Prof. Norton it has been so in Scotland. In general, he says, "the best crops on the best soil, have suffered most."

In examining the question as to the decline of varieties, we have compaired many accounts from every part of this country where the disease is known, as well as those of the most authentic character from Europe; and it is certain that the evidence does not justify the conclusion that old varieties are most affected, or that any exemption in favour of new ones is exhibited.

The Highland Society of Scotland, and the Agricultural Chemistry Association, have very thoroughly investigated this matter, and have collected a great amount of information, in the form of answers to questions which have been addressed to persons in various parts of Britain. Prof. Norton, in his essays on the potato disease, published in the Transactions of the New-York State Agricultural Society for 1845, has given the principal facts which the Highland Society had then collected on this point; all of which tended to show that varieties lately produced from seed, were as badly affected by the disease as any others. One man mentions that he had *sixty* varieties, only two to three years from seed, raised on his own farm, and they were all attacked with as much, and "in many cases more virulence than the older varieties."—The information collected by the Chemistry Association is of a similar character. Twenty-five reports for 1845, state that potatoes recently raised from seed, were as much, and in many cases more affected by the disease than the old kinds; and only *two* individuals give it as their opinion that the new kinds have shown any exemption. The reports of the same Association for 1846, shows still stronger against the assumption that seedlings have any superiority in resisting the disease.

We would not, however, discourage the raising of new varieties of fruits and vegetables. The greater the number of varieties, the better the chance of obtaining good ones by selection. But there is no value in new varieties merely because they are *new*, and we would not reject old ones, till we were confident they could be replaced by those which are *better*.

From the Dublin Farmer's Gazette.

SYSTEMATIC FARMING.

In the immediately preceding numbers of the *Gazette*, we have brought the subject of green cropping in a prominent manner before our readers, and beside, giving such practical directions regarding the cultivation of certain of these crops, as we considered necessary, we endeavoured also to enforce the importance of the subject by our introductory remarks.—We do not offer any apology for pursuing this subject still further, for we again repeat that it is all-important, and upon its adoption as a regular part of the *system*, according to which agricultural practice is conducted, our welfare as agriculturists wholly depends, and it is at the present season when all must decide on its adoption or rejection, at least for one year. We therefore, earnestly entreat the notice of our readers to this subject, and we hope that those to whom it is new may give it a trial, and that those who have already partly adopted it, will extend it still further.

It is only by *systematic* agriculture that we can ever hope to derive all the advantages we might reasonably expect from the cultivation of the soil, and it is to the absence of system that we attribute the backward state of agriculture in this country, and consequently the miserable condition in which, we are sorry to say, we find the great majority of farmers.—Green cropping is the basis of systematic agriculture, because a primary principle is that "no two corn crops ripening their seeds shall succeed each other, without the intervention of a green crop or fallow." We have however, discarded fallowing from the list of agricultural operations, except in some very extraordinary cases, because we can effect even on the heaviest soils, if thorough drained and limed, all the results arising from fallowing, and have at the same time a valuable crop. Green crops or *fallow crops* as they are sometimes termed, are therefore doubly, nay trebly important. They are so from their own intrinsic value; they are so because they form the fundamental principle of good farming, and they are so, because even when a systematic style of agriculture is being followed, they enable us to effect all the purposes of pulverizing and cleaning the land without losing a crop.

But it may be asked what advantages result from following a systematic course in conducting the management of a farm? and with the view of illustrating this subject still farther, we shall briefly notice these advantages. In doing so, we, too, must be allowed to ask a question, and it is this, what is the great end of agriculture? Is it not the production of human food, whether in the shape of grain, or beef, mutton, &c.? and any means which will cause an increased produce are therefore of the utmost importance to all classes of the community. If it can be proved that a systematic manner of conducting operations, founded on right principles, will accomplish this end, it will be granted that we do not attach too much importance to it when we affirm that not only does our prospects as agriculturists depend on it, but that it affects directly the welfare of every one in the kingdom.

The great source from whence all erroneous practices in farming are derived, is to be found in the fact, that by too many the real nature of the soil is not understood. We do not mean to say that they cannot distinguish between a clayey or sandy soil, but we mean that the *specific functions* or natural properties of the soil are not properly attended to. The soil is a store-house of certain substances, designed by the Great Creator of all things for growing or being converted into other substances fit for the use of man or beast. Some soils contain a greater abundance of this converted matter than others, and are therefore *richer* than those in which the matter is less abundant. When however, we grow a succession of crops of the same nature on the same spot for a number of years, and annually carry away those crops to be consumed at a distance from where they were grown; it is evident that we are annually lessening the amount of convertable matter originally contained in the soil, because, such matter has been changed into corn or other articles. The gradual diminution of the substance forming the soil may not be evident to us if we merely look at it, for, to all appearance it is the same as we have ever seen it; yet, if invisible to our sight, it is plainly evident in another way, when we find the produce of that soil becoming every year diminished in quantity, and detorted in quality. Hence it has been found necessary to supply, from time to time, a certain quantity of decomposed animal, vegetable, or mineral matter, by which means the tear and wear of the convertable matter of the soil is repaired to a certain extent, and we are again enabled to go on cropping, as we have been accustomed to do, until the exhaustion of this supplied matter proclaims to us, in terms not to be misunderstood, that another supply is necessary. Now, the efficacy of this manure arises from the fact, that it contains the substances, or a great proportion of them at least, which have been originally extracted from the soil, and converted into grain and other forms of matter, and which, after being used for the purposes for which they were intended, have undergone another change, by which they are again fitted for becoming part of a new succession of vegetables, fit for being used as animal food. It is only recently that scientific research has proved that different species of plants require different kinds of matter to promote their growth; hence showing, that although the particular substances required by one variety of plants, may have, by continued cropping, become exhausted, there still may exist a sufficient supply of plants of another species; and although this important discovery did not cause any alteration in practice, at least in that of the best agricul-

turists, it served to confine the systematic principles which had previously governed their practice, and which had become known to them by the results of long-continued and carefully-considered experience. It has however, furnished an additional argument to the advocates of systematic farming, and it is for that reason that we now bring it forward, as illustrative of the sound basis upon which our practical instructions are founded.

A very important end gained by systematic farming is the eradication of weeds. At short intervals during the rotation, the land is subjected to a thoroughly cleaning process, by which all those useless and noxious weeds which infest our soils are completely eradicated. If we were to judge by ordinary practice, we would be led to imagine that this was not so important a matter as it really is, for we too often witness not only fields, but whole farms and districts covered by vegetation, from whence no profit is derived, and which prevents the growth of these plants which are useful. Year after year these are permitted to grow on unmolested, ripening their seeds, and becoming every season more abundant. Now, if a regular system of farming is pursued as it ought to be, such intruders are never allowed to remain; they are checked in every stage of their growth, until finally the well kept farm looks like a garden. By following an irregular mode of farming this never can be effected, because the succession of cultivated crops is such as to encourage rather than to retard the growth of weeds.

CULTURE OF SPRING CORN.

From the Farmer's Herald.

Having hitherto noticed [Vide Mark-Lane Express, Oct. 4th and 25th, and Nov. 8th, 1847,] the different methods of sowing, and the utilities of some of the implements in the culture of wheat, probably a few remarks (more especiallty applicable at the present time) upon spring corn may be acceptable, and found worthy the attention of some of the agriculturists in your country, being the results of lengthened experience, and given impartially with a desire of improving the inexperienced, and of stimulating the more learned and scientific to increased exertion in the further development of the *most profitable* system of agriculture.

In reference to the choice of seed, much care is not only requisite in having it perfectly clean and free from all inferior grains, but also much judgment is required in the selection of the particular variety best suited to the soil; and although the idea may be ridiculed by some, they are not obtainable in the first instance but by a careful selection whilst growing, as the commonest observer will easily discover many varieties, even in that which is recommended as a true stock, more particularly in wheat, after repeated sowing; and that as all kinds of grain deteriorate, so fresh varieties appear which have hitherto been much neglected (oats in particular), and only require that care and attention which will be amply compensated not only by an improved quality but by an extraordinary produce.

If no new variety is to be obtained, improve that which you have (but I would also warn those against disappointment who place too much faith in change of soil only), and do not be satisfied with your seed as fit for market, reduce it one-fifth, and make it considerable better, as much less seed is required; the refuse will be profit: and although I am not prepared to admit that two pecks of barley or oats are sufficient (under any circumstance) for one acre of land, as has been stated by an Essex cultivator, but would rather recommend two bushels and-a-half of barley, and three bushels of oats, as amply sufficient for any soil, and which may be reduced in fertile districts in good cultivation.

The drill I recommend more especially to all corn that is deposited in loose soil and although the practice of broadcast sowing has been long and extensively practised upon the Essex marls, yet the drill is gradually superseding that system, as it admits the free use of the hoe, which is in most soils essentially requisite in eradicating the numberless and numerous varieties of weeds more or less provalent in the different districts; and the practice of hoeing all the spring crops, even where intended for clover, has been remunerative.

The dibble is more adapted for beans in stiff tenacious soils; and although the drill is often substituted, the other system has been found the most productive, probably from the operation of the manual labour consolidating the land, which an *occasional* path-way across a field discovers is most favourable for the growth of wheat or beans; and therefore, after drilling where practicable, lose not an opportunity of applying the roller either before or after the appearance of the crop, which to beans and wheat will be found highly beneficial.

If the rotation of cropping is altered some attention must be paid to the system of sowing, where the hoes is to be used instead of a fallow; and although much skill and ingeunity has been displayed in bringing Garret's horse hoe to its present state, whereby much manual labour may be saved, yet it requires every land or stetch not only to be exactly of the same width, but also that the rows of corn should be somewhat further apart, and drilled to the greatest nicety; therefore, for the benefit of those under any of those circumstances or otherwise, who prefer the hand-hoe, I beg to offer a few remarks upon that simple implement, which is far preferable to the horse-hoe, and its work will present the same appearance of one continued groove left untrodden throughout between every ridge, which, in spring corn, where clover or other seeds are intended, render it the most desirable, and is much more easily performed by the labourer stepping backwards instead of forwards, which enables him to draw the hoe *two or three feet each time*, thereby not only cutting the land effectually but expeditiously, as an active labourer can complete three roods of spring corn in one day under this system; whereas, in going forwards, he can neither hoe so much nor so effectually in the same time.

From the Farmer's Gazette.

EXPERIMENTS WITH POTATOES.

Sir,—Having read, in last week's Gazette, a statement regarding the efficacy of coal tar as a preventive of the disease in the potato plant, I beg to state the result of experiments tried by me, last season, with different manures, to test their merits or effects on the potato plant—

No. 1.—Potatoes planted whole, being previously dipped in coal tar.—Result: never germinated, but remained sound a considerable time.

No. 2.—Potatoes whole, one yard of drill, manured with one quart of coal tar mixed in the soil.—Plants grew very weakly, no visible symptoms of disease, crop very poor.

No. 3.—Potatoes cut in sets, and, when haeled dipped in coal tar.—Did not germinate, rotted much sooner than the whole potatoes so treated.

No. 4.—Potatoes planted whole, manured with salt, 1 lb. to a yard of drill, incorporated in the soil before planting.—Plants diseased, tubers not so, crop small.

No. 5.—Potatoes planted whole, manured with 1 lb. of flour of sulphur, applied as the salt, to one yard of drill.—Same result as No. 4.

No. 6.—Potatoes planted whole, manured as before, with one quart of soot.—Plants diseased, tubers not so, crop good.

No. 7.—Potatoes planted whole, manured with farm-yard manure, at the rate of 40 tons per acre (soil, poor; subsoil, limestone gravel,) manure put under the potatoes.—Plants diseased, tubers slightly so, crop large.

No. 8.—Potatoes planted whole, no manure of any description. Plants diseased, tubers not so, crop poor.

N. B.—The portion of crop in No. 8 was but very slightly affected by disease.

By this statement it will be perceived that the coal tar had the effect of preventing the disease, or of arresting its progress; but I consider that great care is necessary in its application. That part of the crop manured with farm-yard manure was most affected by disease, which, I consider, is accounted for by the plants being most luxuriant of any, consequently containing a larger amount of sap, which subjected them the more to external injury.

The seed was stored over winter, in the manner before directed by me. The planting was done in the middle of April; and here I beg to remark, that I perfectly agree with you as to the time of planting the general crop of potatoes, had we not such an enemy to guard against as the late disease, and it was in order to evade its blighting influence that I advised early planting. Yours &c., J. J. GORGHEGAN, *Thomastown, April* 18, 1848.

From the Farmer's Gazette.

NEW MODE OF PREPARING BONES FOR MANURE.

SIR—Under this heading, in the last English Agricultural Society's Journal, there is a most important article, from Ph. Pusey, Esq., M. P. Having suffered considerable loss, last year, by the bursting of a carboy of sulphuric acid, on its way to my model farm, twenty one miles from this, I am exceedingly glad to find, as the result of experiments performed by the above-named gentleman, and by two farmers of his neighbourhood, that *wetted* bones, mixed with an equal quantity of damp sand or earth, or ashes of turf or coal, will heat so violently as to be too hot in the middle to be borne by the naked hand and, after a few days, will yield a material of two-thirds the original bulk, cheaper in its cost than the bones dissolved with sulphuric acid, and only half the expense of bone-dust in its ordinary state; 17 bushels of bone dust, 4¼ bushels of sulphated bones, and 8½ bushels of heated bones and sand, producing nearly an equal weight of turnips from one English acre, and 16 bus. of bone-dust, 2 bus. of sulphated bones, 4 bus. of heated bones, giving an equal return from another.

Mr. Pusey considers that there should be about 80 bushels of bone-dust in each mixture, and the heap should be covered with earth. He ascribes the effect "to putrification taking place in the gelatinous substance of the bone," and says, "that no disgusting smell is produced, merely a strong odour of ammonia when the heap is opened. Most of this ammonia is probably drilled into the land, an advantage over the process of dissolving bones in acid, which seems to drive the ammonia away."

I intend, this week to mix a heap of bone-dust and town dung under a shed here, to send out to my farm by return carts, to be ready when wanted for the turnip sowing, and I hope to be able, at some future time, to send you an account of the expense and produce.

I write this to give your readers the opportunity of trying an experiment so easily performed, and so important if generally proved to the agriculture of the country.—Yours &c., CHAS. BEAMISH, *Buckingham-place, April*, 17, 1841.

FARMERS IN THE OLDEN TIME.—Harrison, who wrote in 1577, thus speaks of the habits and condition of the farmers of old times:—"So common," he says, "were all sorts of treene (*wooden*) stuffe in old times, that a man should hardlie find foure pieces of pewter (of which one, peradventure, was a salte) in a good farmer's house; and yet for all this frugalitie (if so it may be justly called) they were scarce able to live and paie their rents, at their daies, without selling of a cow, or an horsse, or mare, although they paid but foure pounds at the uttermost by the yeare. Such was also their povertie, that if some one od farmer, or husbandman, had been at the ale-house, (a thing greatlie used in their daies,) amongst six or seven of his neighbours, and there, in a braverie, to show what store he had, cast downe his pursse, and therein a noble or six shillings in silver, unto them, it was uerie likelie that all the rest could not laie downe so much against it. Whereas in my time, although, peradventure, the foure pounds of old rent be improved to fortie, or fiftie, or an hundred pounds, yet will the farmer, as another palme, or date tree, think his gaines uerie small towards the ends of his time, if he had not six or seven yearse rent lieing beside *him*, therewith to purchase a new lease; beside a faire garnish of pewter on his cupbord, with so muche more in od uessell going about the house; three or four feather beds, so *manie* coverlids and carpets of tapestrie, a silver salte, a bowle for wine, (if not a whole neast,) and a dozen of spoons to furnishe up the sute.' Yet so difficult is it to content mankind, that the same Chronicler records the dissatisfaction at this increase of luxury of the old people of his time, who especially deplored three things, that 'were marvelouslie altered (*for the worst*) in Englande within their sound remembrance'—the multitude of chimneys lately erected, and the great increase of lodgings, with the exchange of treene platters into pewter, and wooden spoons into tin and silver.—They also complained bitterly of the use of oak in buildings; 'for when our h uses,' said they, 'were of willowe, then had we oaken men; but now that our houses are come to be made of oake, our men are not onlie become willowe, but a greate manie oltogether of strawe, which is a sore alteration."—*Maidstone Gazette.*

LOVE OF THE ARABS FOR THEIR MARES.—"Can you tell me how the Arabs treat their mares, which are said to be remarkably docile. INQUIRER."—The following particulars respecting the treatment of Arab mares, and the estimation in which they are held by their owners, will interest many of our readers;—"The mare usually has but one or two meals in twenty-four hours. During the day she is tied to the door of the tent, ready for the Bedouin to spring, at a moment's warning, into the saddle; or she is turned out before the tent ready saddled, the bridle merely taken off, and so trained that she gallops up immediately at her master's call. At night she receives a little water; and with her scanty provender of five or six pounds of barley or beans, and sometimes a little straw, she lies down content, in the midst of her master's family. She can, however, endure great fatigue; she will travel fifty miles without stopping; she has been pushed, on emergency, one hundred and twenty miles, and occasionally, neither she nor her rider has tasted food for three whole days." Malcomb says, in his "Sketches of Persia," "An Arab sheick or chief, who lived within fifty miles of Bussorah, had a favourite breed of horses. He lost one of his best mares, and could not for a long while discover whether she was stolen or had strayed. Some time after, a young man of a different tribe, who had long wished to marry his daughter, but had always been rejected by the sheick, obtained the lady's consent and eloped with her. The sheick and his followers pursued, but the lover and his mistress, mounted on one horse, made a wonderful march, and escaped. The old chief swore that the fellow was either mounted upon the devil, or the favourite mare he had lost. After his return, he found the latter was the case; that the lover was the thief of his mare as well as his daughter; and that he stole the one to carry off the other. The chief was quite gratified to think he had not been beaten by a mare of another breed; and was easily reconciled to the young man, in order that he might recover the mare, which appeared an object about which he was more solicitous than about his daughter."—*Ib.*

THE OXYGEN WHICH SUPPORTS LIFE.—"What becomes of he oxygen which is taken in by man in breathing? G. K."—It is mostly exhaled combined with carbon, the combination keeping up the animal heat. Liebig says:—"In the animal body the food is the fuel; with a proper supply of oxygen we obtain the heat given out during its oxidation or combustion. In winter, when we take exercise on a cold atmosphere, and when consequently the amount if inspired oxygen increases, the necessity for food containing carbon and hydrogen increases in the same ratio; and by gratifying the appetite thus excited, we obtain the most efficient protection against the piercing cold. A starving man is soon frozen to death. The animals of prey in the arctic regions, as every one knows, far exceeds in voracity those of the torrid zone. In cold and temperate climates, the air, which incessantly tries to consume the body, urges man to laborious efforts in order to furnish the means of resistance to its action, while, in hot climates, the necessity of labour to supply food is far less urgent. Our clothing is merely an equivalent for a certain amount of food. The more warmly we are clothed the less urgent become the appetite for food, because the loss of heat by cooling,

and consequently the amount of heat to be supplied by the food, is diminished. If we were to go naked, like certain savage tribes, or if in hunting or fishing we were exposed to the same degree of cold as the Samoyedes, we should be able with ease to consume 10 lbs. of flesh, and perhaps a dozen of tallow candles into the bargain, daily, as warmly clad travellers have related with astonishment, of these people. We should then also be able to take the same quantity of brandy or train oil without bad effect, because the carbon and hydrogen of these substances would only suffice to keep up the equilibrium between the external temperature and that of our bodies."—*Ib.*

From the Farmer's Gazette.

AGRICULTURAL CHEMISTRY: THE TURNIP CROP.

Under the above title, is published, in vol. viii., part 2, of the Royal English Agricultural Society's Journal, an elaborate and valuable article by Mr. Lawes, on the chemical composition of the turnip, and on the effect produced by the application of a great variety of manures to its cultivation.—The author treats his subject under the heads—field and laboratory experiments. In order to determine, if possible, what constitutes the essential food of the turnip, five successive crops of that root were sown on land which had borne, in the preceding year, wheat after clover. The object in these experiments was not to produce the largest amount of crops, but to determine the effect of given quantities of various manures, so much so, indeed, that agriculturists, not taking this into account, would feel disposed to ridicule the average produce of 10 or 11 tons of bulbs per statute acre; but it is also shown that where a tolerable amount of the best kind of manure was applied, a crop of 20 tons of bulbs per acre was produced.

Results of experiments to grow turnips, without the application of manure, are quoted early in the essay, and these tend to call in question the generally admitted power of the turnip, in common, as it was supposed, with all large-leaved plants, to extract nourishment from the air; for, as it will be observed, the produce dwindles from 4¼ tons in the first, to 13¼ cwt. in the third, and in the fourth year we are told the bulbs only averaged the size of radishes. On the other hand, by the application of 12 tons of farm-yard manure per acre, in each of these three years, the produce in bulbs was raised from 9½ tons the first, to 10¾ in the second, and to 17 tons in the third year.

No manure being applied, the result was:—

	Bulbs per acre.				Average weight of bulbs in pounds and tenths.
	Tons.	cwts.	qrs.	lbs.	
1843 . .	4	3	3	2 . .	0.52
1844 . .	2	4	1	0 . .	0.36
1845 . .	0	13	2	24 . .	0.11

"Common usage," observes Mr. Lawes, "seems to attribute to the turnip and green crops generally a power of collection from the atmosphere, which is not recognised in our grain-yielding plants; and it may at first sight appear inconsistent with this view that the growth of the turnip, in agricultural quantity, should be so essentially dependent on artificial supply as our results would show to be the case. There can be no doubt that there is some truth in this current supposition; but there is little doubt that the power of collection from the atmosphere very *materially* depends upon the quantity and quality of the supply to the soil by manures; in fact, that upon the judicious and liberal provision of certain constituents by art, we must rest our hopes for atmospheric accumulation."

Manures abounding in nitrogen, such as guano, for instance, Mr. Lawes considers as promoters of leaf, rather than of bulb, in the turnip crop: and his experiments lead to the conclusion, that if carbon be supplied, and that the land be well pulverized, so that the fibres of the turnip root can pass readily through it, no deficiency of nitrogen will be experienced.

"For the growth of turnip bulb," he says, "a soil is required in such a mechanical condition as shall render it easily permeable to the atmosphere, and to the fibrous roots of the plants; that healthy action and a tendency to development very extended under-ground collective apparatus should be induced by the use of the so-called 'mineral manure,' these never being in an alkaline state, and always containing a considerable quantity of phosphoric acid, easily available to the plant; that after the early stages of the plant are passed, its rapidity of growth depends upon an abundant provision *in the soil* of constituents for organic formation, especially of carbon; that nitrogen must be by cultivation, though seldom by special manures; and lastly, that all these requisites being provided by the farmer, the degree in which his efforts will be availing depends essentially upon certain climatic conditions, comprising a considerable *continuity* and *amount* of rain, as a means of taking up the stores of the soil, keeping up a vigorous circulation in the plant, and supplying the dissolved gases of the atmosphere."

The result of this article, which occupies 70 pages of the Journal—and the experiments upon which it is founded, must have occupied a vast amount of time and attention during five years—is, that the turnip is not, as was supposed, capable of abstracting much of the food necessary for the enlargement of the bulb from the air; that farm-yard manure, assisted by bone earth dissolved in sulphuric acid, is the most economical application; that of the three or four thousand pounds of dry matter contained in a crop of turnips, one-half is lost, being retained by, or expended in, the respiration of the cattle by which it is consumed; and that, therefore, in order to keep land in the maximum degree of fertility, extraneous manure, in addition to that produced by feeding cattle on the produce of the farm, must be provided, but that this need not be nitrogeneous; and finally, in the words of our author—

"It must not be forgotten that the tillage of the soil constitutes a most essential element in turnip culture; and that he who sows his seed upon a badly cultivated soil is only throwing away his time and money. The naturally light and porous nature of a turnip soil, points out what are the requirements of these plants; and when the necessary degree of tilth has been obtained, and the seed sown, the introduction of air beneath the surface of the soil by means of the horse and hand-hoe cannot be too frequent; for it is useless to place a large amount of dung in the soil to be converted into the substance of the turnip, unless the free action of the air is provided for at the same time, by which alone the decomposition of the dung can be effected."

THE AGRICULTURIST.

Illa placet tellus, in quâ res parva beatum
Me facit, et tennes luxuriantur opes.
Pascitur hic; ibi pascit ager.

Mart. Lib. x., *Epig.* xcvi.

That farm be mine, where stock, though small, can bless,
Whence poverty keeps far away;
Where industry affords me food and dress,
And means my rent and tax to pay. J. T. D.

SIR—The above, I think, is the wish of every well-meaning agriculturist—that is, of every man who is content to support himself according to the mandate given of old, "to live by the sweat of his brow." Those to whose lot it happens to obtain "*res non parta labore sed relicta*"—wealth not earned by them but descending from their ancestors,—may smile at the lowly state and "destiny obscure" of the farmer; but if they reflected, amid all their pomps and vanities, they would see that the happiness of the humblest peasant is often greater far than theirs. He enjoys what few of them can boast,—"*Nox cum somno, sine luce dies*"—"Repose all night and quiet all the day;" no wonder, then, at the wish expressed in Seneca, "*Plebeius moriar senex*" (*Thyest*, Act ii., chor.); that is, An old farmer let me die. This, also, was the second wish of the great Roman poet Virgil, his first being to be a good philosopher; and, like Solomon, his prayers being just, were granted. "To be a husbandman," as Mr. A. Cowley remarks, "is but a retreat from the city; to be a philosopher from the world, or rather a retreat from the world, as it is man's, into the world, as it is God's." But as few men have capacity, means, or leisure sufficient to become philosophers, the best mixture of human affairs that we can make are the employ-

ments of a rural life. It is, as Columella says, "*Res sine dubitatione proxima et quasi consanguinea sapientiæ* (lib. i. chap. 1)—"The nearest neighbour, or rather the next in kindred to philosophy."

There is no art or science comprehends more parts of philosophy in it than agriculture. Ennius sums up the elements of all nature as the sun, or fire, air, water, and earth; and surely, as Varro remarks, these are the principles of husbandry. Cicero also maintains that the life of the farmer approaches very nigh that of the philosopher: "*Mihi ad sapientis vitam proxime videntur accedere.*"—*Cic. de Senect.* And so it does, from its antiquity, utility, and dignity; but although all acknowledge its antiquity and utility, yet still its dignity is not so generally allowed as it ought to be. We read how L. Q. Cincinnatus, the Roman, was twice called from the plough, and made dictator. In his first campaign he nobly repulsed the Volci and Equi, and even in his eightieth year conquered Præneste—B.C. 460, *Vid. Liv.* 3, c. 26, *Flor.* 1, c. 11, *Cic. de Finib.* 4, *Plin.* 18, c. 3.

But few men in the British empire are called from the spade to the sceptre, or from the plough to the parliament; and this adverse feeling to agriculture springs from an evil custom now grown strong as a law among us, because, as Cowley remarks, no halls are opened in our universities for its inculcations, no honorary degrees bestowed on its adepts. If two or three thousand scions of our nobility were regularly taught for seven or eight years in Trinity, Oxford, &c., its principles and practice, and come out baccalaurie Arati non artium, bachelors of the plough, and not of arts, and then have lands and capital bestowed on them by their parents, by which they could exercise their acquirements, you would see many of our gentry make their fortunes in the most innocent, peaceable, and honest way; besides, their improved modes would be followed by their neighbouring tenantry. The aristocracy would not have to regret so many untimely deaths as usually occur to those who wear the sword, and by it die in lands remote. It is a pity so many fine young noblemen quit Ceres and follow Bellona for their bread.

Man lives without every other art but agriculture; it is like speech, without which society cannot be preserved. No life is more innocent or more secure and healthy. A blast of wind may completely ruin the merchant, and his bankruptcy ruin hundreds. The varying modes of fashion and the fluctuations of trade, have reduced thousands to beggary. Not only houses but whole cities, have severely suffered by the shifting flights of commerce. What have the greatest heroes done but made widows and orphans, enslaved their country, or brought on their own heads the maledictions of their race? But who ever cursed a farmer for his plenteous crops? Is not his toil blessed by every passer by? What are the scenes of cities, the joys of theatres, or all their galaxies of beauty, in comparison to rural landscapes, the melody of groves, and the flowery gems that deck the fields and gardens:—

"Who that has reason and his smell
Would not among roses and jasmine dwell?"

A garden was the gift bestowed upon Adam by the Almighty, even before he gave him a wife. It was "in a bush that Moses saw the radiant Deity"—we might see him even in the humblest daisy of the field:—Epicurus and his friend Metrodorus, Diocletian and Charles V., &c., loved gardens and spent their happiest hours in them.

"God the first garden made, and the first city Cain."

I need not speak of the antiquity of agriculture here; suffice it to say, that the three first men in the world were a gardener, a ploughman, and grazier. These were the origin from which all our great nobility sprung, who now are not only too proud to till the ground, but even disdain to tread upon it. Ecclesiasticus forbids us to hate husbandry, because (says he) the Most High has created it"—(chap. vii. 15). "We may talk as we please about lilies and lions rampant, and spread eagles in fields *d'or*, or *d'argent;* but if heraldry were guided by reason, a plough in a field arable, would be the most noble and ancient arms."

Where is the nobleman, gentleman, or even petty trader who does not employ a dancing-master for his children, to teach them the measured movements of folly—the ceremonial mummery and madness that was offered to heathen idols?—But which of your grandees employ an agriculturist to instruct his sons in the useful movements of husbandry? No college or university should be without four professors of this noble and truly useful art; viz., one of *aration*, another of *pasturage*, a third of *horticulture*, a fourth of *rural economy*. Lectures from such men would be far more profitable to society than those usually given on logic, metaphysics, &c., which are often as useless and difficult to be understood as the square root of a mathematical idea. But I am too humble to dictate on this subject,—what I have advanced I have borrowed from the immortal Cowley, who flourished 200 years ago. In this letter I am but the mere echo of his sentiments, *vox et preterea nihil*. The wisdom and spirit of the present age I hope will not overlook his remarks. The failure of the potato crop of late years has taught a lesson that will not soon be forgotten.

What further I have to say of an agricultural life I shall borrow from the ancient poets; the cradle of poetry was rocked by shepherds.

"The Muses still love their own native place,
It has secret charms which nought can deface."
—Ovid's Epist. lib. i. iii. 35, Pont.

The first, at least the second, poet whose works remain, not only praised but taught us agriculture, that is Hesiod. Homer tells us Laertes was a gardener, and calls Eumenes, who kept the hogs, "a divine swineherd." What greater epithet could he bestow on Agamemnon or Achilles? Theocritus (Idyl. xxv.) styles the husbandman "divine." Virgil represents King Evander receiving Eneas in his rural hut, around which cattle thronged—

"There oxen stalk'd, where palaces are rais'd,
And bellowing herds in the proud Forum graz'd;
Lo! said the good old king, this poor abode
Received great Hercules, the victor god!
Thou, too, as nobly raise thy soul above
All pomps, and emulate the seed of Jove."
—Æneid. VIII., 360.

It was certainly a pleasing contemplation to the Romans to look back to their original, and compare their magnificence to the rural state of things that once appeared on the very spot where their palaces were built.—(See Tibull. El. 5, 1 ii. 25; and Proper., lib. iv. 4) But if they rightly considered the subject, they would see that "state and form disguise man, and wealth and luxury disguise nature."—(See Enquiry into the Life and Writings of Homer, p. 25.)

Horace preferred living on his Sabin or Tiburtin manor, to all the honours and pleasures of the court of Augustus; nay, he refused being secretary of state to that great emperor of the world, who requested him, "*ut nos in epistolis scribendis adjuvet.*" Only I would not wish to trespass too much on your invaluable space, I would translate a few passages from the writings of Horace, descriptive of the joys and happiness of rural life, but the intelligent reader can see them by turning to the book itself. The passages I allude to are "Epod. Ode ii., lib. ii., Sat. vi.," about the Country Mouse; the "10th Epist., lib. i.," to Fuscus Aristius. Equally applicable to my subject would be "Virg. Geor. lib. ii., 458," where the bliss of the agriculturist is portrayed in its truest colours; and also a part of "Cowley's fourth Book of Plants." Several parts of "Martial," &c. "Claudian's Old Man of Verona," I have long admired. I will give two lines of it as a sample:—

"Felix, qui patriis ævum transegit in agris,
Ipsa domus puerum quem vidit ipsa senem."

Happy the man who spent his time
In tilling what his father gave;
Who from the home of childhood's prime,
In age was carried to the grave. T. E. D.

But I have occupied too much, Mr. Editor, of your precious time. I love a country life, and would fain make others do so too; but I will conclude, addressing to you the words of Cowley to Squire Evelyn:—"I know nobody that possesses more private happiness than you do in your own grounds; and yet no man who makes his happiness more public, by a free communication of the act and knowledge of it to others. All that

I myself am able yet to do, is only to recommend to mankind the search of that felicity which you instruct them how to find and to enjoy."—J. T. D., *Correspondent of Farmer's Gazette.*

From Bell's Weekly Messenger.

WIREWORM AND SODA ASH.

Westmill, near Ware, May 5.

Sir,—I had four acres of light loamy land dibbled with two pecks of wheat per acre last autumn (after tares), and although so small a quantity of seed was sown, there was as good a plant as was desirable. A week or two after the wheat had appeared I perceived that at least one-fifth of the plants had died. I examined the roots, and found wireworm at almost all the dead or dying plants. I brought some home, and put some of them, and some mould, into two basins, and tried to destroy them by mixing carbonate of lime with the one, and salt and solutions of salt with the other; yet neither of these reputed destroyers of the wireworm had any effect. I then obtained some soda-ash, and sowed it by hand just before rain, at the rate of 1¼ cwt. per acre. and am sure it either destroyed them or caused a departure from near the surface into the deep recesses of the subsoil, as I could not find (although I examined minutely) one afterwards, nor has a single plant been injured since. The man who sows the soda ash should have on a stout pair of gloves, or his hands will be excoriated. It may also be necessary to state, as the cost of soda ash might deter many from using it, and induce some to endeavour to kill the pests by less costly and useless means, that soda ash will not only destroy the wireworm, but it also acts as a potent manure. This is demonstrated by the luxuriant growth and healthy appearance of the field of wheat in question, which is not excelled by any about this part; indeed a neighbouring friend and large farmer asked me the other day, what magical stuff I had put upon it The soda ash was obtained of Mr. Fothergill, Upper Thames-street. I may state, in addition, that although so small a quantity of seed was used in the field in question, and so many plants were destroyed, there is no doubt it will be the best piece of wheat on the farm. Some of the other fields, drilled with six pecks per acre, are much too thick. A field on the farm, dibbled with nearly a bushel per acre in the autumn of 1846, produced 49 bushels per acre; and, I believe, had there been less seed used, there would have been a greater produce. My father had a piece of autumn-sown wheat a few years ago, which was so thin in the following spring that he was advised by his neighbours to plough it up, and had resolved so to do, when, fortunately, an experienced friend induced him to let it remain; and to his joy, he beheld at harvest time a splendid crop, which surprised his neighbours and himself by producing more than 40 bushels per acre.—T. Evennett.

AGRICULTURAL IMPROVEMENT.

Much has been done by the cultivation of the soil to improve our country; but there is still much land to possess, and must be subdued by the skilful application of the spade and the plough.

Dr. Dalton has calculated the quantity of water which falls from the air in rain and dew in one year in England and Wales only at 115,000 millions of tons; of this immense amount, about one-third is carried off by the rivers and subterraneous cavities. The same philosopher infers that 75,000 millions of tons are yearly evaporated into the atmosphere from the surface of England and Wales only. This quantity surprise us by its amount; but Dr. Thomson in his outline of heat and electricity, nearly double the amount. Farmers and others have much in their power to prevent such an evaporation from taking place on the surface of the soil, and they have also much in their power to improve the climate of our country by means of draining the land properly. It is now pretty well known that where land is wet, a great amount of moisture must be taken from it before the land is in a proper state for working; and where this is done by means of evaporation, the temperature of the soil and air will be much lower than if the water had been removed by means of drains. In a climate like ours, few degrees of heat is of great importance to the farmers; and the following extract may be worth reading by all who have land to cultivate.

The salubrity of a district is greatly promoted by cultivation. England was not always the same healthy country as it now is—once periodical disease, agues, and low fevers were prevalent throughout the island; they are now comparatively but little known, except in the yet uncultivated fens of Lincolnshire and a few other similar spots. Under the blessing of Providence, the labours of husbandry have chased away disease and famine familiar to our forefathers, and largely contributed to our present degree of national health and wealth.

Indolence is the mother of mischief, both morally and naturally. While the flowing river produces wholesome food for man, and sweetens the air he breathes, the stagnant lake or pond engenders noxious reptiles and exhales unwholesome vapours destructive to health. Throughout all nature the cessation of motion seems to be the signal for the work of corruption, and corruption is diffusive. The heavens are in constant motion and declare the upholding power of the Creator, and his unwearied interest in the works of his hands.—The sea is in constant motion, else it would soon become putrid and destructive to the life of all animate creation. The earth is kept in motion by the immediate agency of God in those things which are beyond the reach of man, as its annual and diurnal revolutions, waters and winds, &c; but with regard to its mission, it is "given to the children of men," and they are invited by the example of nature, and the instructive motions in themselves, both to be in action and to keep in action their little domain. From unhealthy surface of motionless water and low uncultivated land arises many of the infectious diseases which afflict mankind. These effects have sometimes aroused men to exertion in the removal of their causes; and whenever draining, ploughing, and other branches of agriculture have been diligently pursued, the result has uniformly been a gradual improvement in climate, and freedom from local disease. Soils of a cold retentive clayey nature, being in a degree impervious, derive comparatively little advantage from states of the atmosphere which purify and renew lighter soils. They generate chilly unwholesome damps, and are ill adapted to produce vigour and healthy vegetation. Land of this kind, if it has a good body, will be materially improved by a thorough draining; this, at the same time, manures it, and pulverisation renders it susceptible of the salutary influence of frost in the winter, and opens it for free absorption and evaporation in the summer. Stagnations cause impurities: agriculture, by preventing these stagnations, tends to produce a healthy climate.—*Farmer's Herald.*

Effects of Temperature on the Covering of Animals.—"I observe that animals always get a new covering on the approach of winter, and also of summer, which is probably attributable to the change of temperature, as Nature always adaps herself to the circumstance in which the animal is placed. Can you tell me whether this influence of climate prevails throughout the earth?—G. M."—The influence of temperature on the covering of animals appears to be greater in extreme climates, whether hot or cold, than in moderate ones. The following remarks will serve to illustrate this fact:—"Many quadrupeds, inhabiting the colder regions, appear in their natural colors during summer, but become white in winter. The same change takes place in the plumage of several land birds; but is not observable in insects, or the other invertebrate groups. Temperature has likewise a great influence on the size and color of animals. The Sphinx convolvuli of Europe are found also in India, but of a much smaller size and more distinctly colored: this is usually the effect of heat upon animals whose chief range is in temperate latitudes. On those which may be considered inter-tropical, a greater degree of heat not only increases the brilliancy of their colors, but adds to their size. There are many birds and insects common both to Central Brazil and Cayenne; but from the greater heat of the latter country, the specimens

are always larger and the specimens more beautiful. Temperature likewise affects the clothing of animals in respect both to quality and quantity. This is more particularly observed in such domesticated animals as have been transplanted from their natural climate. The covering of swine in warm countries consists of bristles of the same form and texture, thinly dispersed: while the same animals in colder climates have an additional coating of fine frizzled wool next the skin, over which the long bristly hairs project. The difference is very remarkable in the swine of northern Europe and those of tropical America, the latter appearing almost naked; it may be observed in a less degree in those of the south of England and the north of Scotland. Similar appearance present themselves among the sheep of warm and cold countries: the fleece of those of England consists entirely of wool, while the sheep of Shetland and Iceland possess a fleece, containing, besides the wool, a number of long hairs, which give it an appearance of being very coarse."—*Maidstone Gazette.*

ON NITRE.

"NITRE" or SALTPETRE, (Nitrum, Lat. salpetree, or saltpetre) is a genus of the saline minerals of the earth, with holes like a sponge, found in all the four quarters of the globe, sometimes covering other rocks, as limestone, chalk, and calctuff, and also in thin crusts on the surface of the soil: and in many countries it is regularly produced from accumulated heaps of earth, exposed at certain seasons to the atmosphere. The colour is light ruddy, or snow-white, yellowish-white, or greyish-white; occurs in flakes, crusts and crystals: dull, glimmering, or shining, with a vitreous lustre; alternates from translucent and transparent; brittle and easily fragible; deflugrates when thrown on hot coals.

Saltpetre from molfetta contains:—

Nitrate of potass	42 55
Sulphate of lime	25.45
Carbonate of lime	30.40
Muriate of potass	0.20
Loss	1.40
	100.00

OR,

Acid	44.0 and	31
Potash	51.8 and	61
Water	4.2 and	8
	100.0	100

1000 parts, from the Cave of Pulo, near Naples, give—

Nitre	407.5
Muriates	26.7
Sulphates soluble in water ..	20.8
Sulphate of lime	96·7
Carbonate of lime	410.0
Loss	38.3
	1000.0

The taste is sharp, bitterish, and cooling; dissolves in seven parts of cold water, and in less than its own weight of boiling water; slightly deliquescent; more soluble in hot than in cold, and resists putrefaction, and is supposed to hold water equal to its own weight; detonates most violently when made red hot, and when charcoal is thrown upon it, and with combustible bodies, and with phosphorus; hence the extensive use of nitre in the composition of gunpowder, which is usually composed of 76 parts of nitre, 15 of charcoal, and 9 of sulphur. It is also used in medicine, and many of the arts. Specific gravity 1.920 and 1.9369. The ancients confounded nitre with soda or natron, and leave us in doubt if they knew nitre; but it was known to Roger Bacon in the 13th century.

Nitre, in chymistry, is the nitrate of potass, or the fixed vegetable alkali in combination with the nitric acid, one of the most powerful acids that is known, and constituted of nitrogen and oxygen in a peculiar proportion to each other—about 70.5 of oxygen and 29.5 of nitrogen. Nitre is formed wherever animal matters are decomposed, and exposed to substances with which it can combine; grounds where excrements are dropped, walls of houses, drains and slaughter houses, where putrid vapours abound, all afford nitre by long exposure to the air. Old mortar or loose calcareous earth, is supplied to the artificial beds for the acid to combine with, during the putrefaction of the animal and vegetable substances. After many months of constant attention, nitre will be found in the mass, not unfrequently combined with calcareous earth. It is also formed without animals or vegetables, by means of lime and heat in the open air, and also from the surface soil, in many countries, by various methods of preparation, by digging pits till the water imbibes the salt, and then drawn off; and by extracting it from the earth by boiling in vats filled with water, and by sweeping it in some places from the surface of the ground, and washing and lixivating with wood ashes. It consists of 6.70 of acid ⋈ 6 potash. Potash is got by lixivating the ashes of plants, and is now ascertained to be the oxide of potassium, one of the newly discovered kaligenous metals, and consists of—

Potassium	86 or 83.371
Oxygen	14 or 16.629
100	100.000

The colour is white, and it smells like quick lime being slaked; the substance is very brittle; taste very acrid and highly corrosive, destroying the texture of animals and vegetable bodies: specific gravity 1.7085; melts with heat, and at a strong heat evaporates in a white acrid smoke; contains one-fourth of its weight in water after a red heat, and exposed, it quickly absorb moisture, and runs into a liquid and combines with carbonic acid. Water dissolves twice its weight of potash and the solution resembles oil, being clear and colourless.

Of late years nitre has attracted some notice as a manure, having been applied as a top-dressing on various crops, and with very fair success. On wheat it has exceeded in value both rock-salt and soot, but in one case, it did not yield so much corn, and soot seemed preferable; and on a gravelly soil dressed with nitre, the produce in straw was great, but much mildewed. On hay grounds nitre increased the quantity of produce by one-third, and it was cut much earlier.—On chalky lands the effects are generally good. The conclusions are in favour of sowing it in moist weather at the rate of 1 to 17 cwt. per acre, and to be bruised to powder to pass through a sieve. On dry soils, and in dry seasons, some persons assert that nitre does harm, while others think it answers best in these circumstances; on clays and cool loans the results have been generally favourable, but extend no benefit to the succeeding crops. It kills slugs and insects, and is applicable to any young crops, and may be mixed with ashes or any similar substances. The application is of the same nature as that of salt, which nitre much resembles; for turnip crops it should be mixed previously in the soil or with the manure, for such substances will injure the young plants, if they be in immediate contact. The quality is very various; the price is about £1 5s. per cwt. If the use became extensive, the supply would soon become scanty; the price varies with the angle at which light is refracted through it; an angle of 5° is called "par," and a refraction above that number diminishes the value by about 1s. per cwt. from 4 to 20 per cent of refraction.

Salt having been found in grain, and more largely in wheat, such substances as nitre and salt were recommended to assist these vegetables, but no similar result has followed; the quantity of straw has been much increased, but the grain has not been improved in quantity or quality; plants may only require a quantity proportionate to their bulk; and salts being a minor quantity in their constitution, the general bulk may not be much increased by a larger quantity being afforded, even if the fact were satisfactorily ascertained that plants imbibe as food the substance found is their construction, when they are artificially supplied.

The chemistry of nature and of art are so different, that a

lationship can hardly be said to exist between them; and in the processes of combination and decomposition, nature holds in scorn our attempts to follow her steps, by our utmost investigations, into the operations of the grand laboratory of the universe.

Newcastle Farmer.

COBOURG, CANADA WEST, JULY 1, 1848.

The Hay making from herbage plants, Clover, &c., is now, *or ought to be*, in full operation, as being so totally distinct from the natural grasses from their greater breadth of leaf, size of stem, and great succulence, they require cutting before their most valuable qualities are lost, and the leaf and stem, their main bulk, is dried and withered by a supply given to the ripening seed; for although some portion of weight may be lost by early cutting, still the value of the provender is increased in a greater ratio than any loss sustained by a weightier crop. This, of course, merely applies where the clover, &c., is nearly pure and but a small admixture of timothy or other grasses.

It is our opinion that clover is best sown alone where a permanence of pasture is not required, which can scarcely be obtained on land really suitable to clover, requiring as it does a soil of a light warm nature, to be most productive, and on which timothy is not sown to advantage, *that* grass requiring a much moister soil, where clover would in all probability be killed out the first severe winter; and we believe clover culture to be most profitable; not more than two cuttings should be allowed, and to be fed down the second year, or immediately broken up for a spring crop, as it is obvious that where the plant fails, its place is taken by weeds or wild grasses of the worst description for the farmer, which cost more to eradicate than the loss sustained by a meagre scanty crop. We have often regretted to see fine fields left untouched until the leaves have assumed a russett appearance, the flowers have faded and dropped from the stem, from the withered and dried state of the plant; and then the evil is consummated by an unnecessary exposure of the crop upon the field, the leaves are deposited on the land merely to form a manure for the succeeding crop, and the stalks, as withered and stringy as flax stems, are carried to the barn, when they are as useless as bad pea straw, and as innutritious as pine shavings.

It has often been a matter of surprize to us that there should be a difficulty of substituting another variety of the trofolium, and that the cow clover, or cow grass, is not more generally used, which comes into flower a fortnight later than the red clover, and is consequently better adapted to sow with our most valuable grass, "the timothy." We find 'American Cow Grass Seed' sold in the British markets, and is in general demand in most of the English counties, even where the highly prized rye grass is in good repute; but as we cannot substitute any grass for the timothy, if we must mix the herbage, our only chance seems to be the cow grass; we believe it is not so prolific although very similar to the red clover, and the seed is less abundant and more difficult to thrash out, but the machines will obviate the last difficulty.

We have always doubted the necessity or propriety of sowing any mixture with the timothy, as, if sown in good season in the fall, with either Wheat or Rye, a good crop may be anticipated.

An excellent article "on running out of varieties," from *The Albany Cultivator*, which so entirely coincides with our view of the subject, will be found in our present number. We believe it will tend to correct some erroneous ideas on the subject, and prevent some unnecessary trouble.

It must be sufficiently evident that no radical change can take place in any plant not grown from seed, as the potato, artichoke and cluster onion, &c., since a cross or hybridism of a mixture of two or more of any description can only be produced by the impregnation of the flower, and so long as the propogation is not continued from the seed, the character of the bulb or tuber itself must remain the same.

We would not be understood to say there can be no change in the quality of the esculent; we believe the contrary, a potato which would be dry and mealy on a particula and suitable soil, may, by continued growth on soil of another description, become close or watery, and perhaps in particular locations, be almost unfit for human food; but this may be remedied by a return to a soil suited to its peculiar character. We have reason to believe that a larger quantity than usual has been planted this spring, which has been the cause of the scarcity of seed; and that the rot in the cellar from the prevailing disease of the last two years has not been so general as heretofore.

We must confess we have a fear that the use of a large proportion of manure applied immediately to the seed in the drill, inducing a luxurient and succulent vegetation, will tend to perpetuate, or at least to favour the disease, supposing, as we do, the cause to be atmospheric, and that luxuriance rendering it peculiarly liable to suffer more readily. No doubt a larger crop is generally the result of such an application of manure, but if the produce be unsound, the practice is bad policy.

The hoe crop generally, will now need the most vigilant attention on the part of the Farmer—'no stirring of the land, no crop.' The cultivator, hoe and plough, must be put into operation, or vile weeds will blast the hopes of the grower. A treble loss is sustained by neglect, weeds will take the nutriment from the cultivated crop, they will seed and lay the foundation for a future annoyance and loss, while if cut over and buried up they serve as a nourishing manure.

We have thought that Potatoes, when earthed up so close as that an apex or sharp ridge is formed, that much benefit is lost in a dry season, by the rains passing off too rapidly thro' the deep furrow without communicating the requisite amount of nourishment to the crop; we always prefer leaving the ridge partially flattened.

The Quarterly Committee Meeting of the Northumberland Agricultural Society, was held at Colborne, on Wednesday the 13th June, when, as the funds of the Society were voted to be applied to the approaching Exhibition of the Provincial Association, and no appropriation had to be made for local purposes, little interest was taken in the meeting, and consequently there was a very short attendance; in fact there was no representative from Hamilton, and but few from Haldimand and Cramahe. The gentlemen from Murray mustered in great strength, some from a misconception that they were Directors of the Society, being mislaid by a representation, that, as Directors of their Township Society, they stood in the same relation to the County Society, and some two or three on a calculation of carrying measures beneficial only to themselves, but they missed a figure.

At the General Meetings in January of each year, all the officers are chosen, *and at no other*, and this on the just and liberal principal of allowing all members a voice in the choice of the officers.

At the meeting last January, the delegates from Murray, *after much reluctance*, gave in a list of subscribers in that Township whom they were desirous should be Directors of the County Society, at the same time expressing a wish that they, the Murray Township Society, should, in their own conclave, nominate and appoint whom they chose to that office without reference to the voice of the General Meeting. This could not be conceded, because at variance with the constitution of the Society; their own list was therefore adopted without a dissentient voice; but lo! some weeks afterwards a new list of names was furnished and published in the 'Star' and 'Farmer,' purporting to be a list of the Directors of the Murray Township Society; so far so good. The Murray Township, as a Society, votes its own officers, but these are not necessarily officers of the County Society, although several of the names occur in each. But the small gentleman from Murray—not having the honour of his personal acquaintance his name escapes us—is in error in supposing that the Township has of itself the right to do for the County, what the County never attempts to do for the Township Societies, to name their respective officers.

Every Society of any description is composed of members, who are such, on certain conditions. Now the condition of membership in "The Northumberland Agricultural Society" is "the payment of five shillings per annum to its funds."—Out of *such Members* a Committee, or Board of Directors is formed, for directing the affairs of the Society, and appropriating, as shall to them seem best (at a meeting duly called for the purpose) the funds of the Society.

The Society have ever been too lax in their discipline in voting Directors who have not paid their subscriptions, who consequently are not even members of the Society, still, altho' the rule has been suspended, it is not, *it cannot be*, abrogated; and persons so nominated are in precisely the same condition as gentlemen Gazetted to the Commission of the Peace, who, if they fail to qualify, are incompetent to act or vote in any public or private business connected with the commission. Indeed with respect to Agricultural or any Society were it otherwise, the greatest opening imaginable would be made for fraud; for, suppose a party in a certain locality, find that a measure especially beneficial to themselves might be carried by an avowal merely of being members and withholding their subscriptions, they may be appointed Directors—come in force—carry their measures high-handed—oppose other measures in which they have no interest, and appropriate funds to which they have never contributed one shilling. This is so glaring an injustice and so complete an anomaly at variance with all ideas of good regulations, that it never could be allowed.

Now, *some* of the Murray gents (we can never believe the Township is fairly represented by them) seemed bent on subverting all government unless vested in themselves, they shewed their teeth at their very first appearance at a County Meeting. They are desirous of being connected with the Society, but wish at the same time to be wholly independent. They have no objection—having a laudable desire to be seen in good company—to take a cast in the county state carriage; but that is not enough for them, they must have their Rosinante *in* the carriage too, and retain their seat in an independent saddle, while they hold the lines and guide the carriage at the same time—this incredible feat they believe themselves quite competent to perform. We sincerely hope our small friend will not attempt it.

These gentlemen seem to hold to the principle, of "What is yours is mine, and what is mine is my own," for their very modest proposition is, that they will countenance the County Society by the payment of five shillings per member, per annum; provided said Society will *return them* three shillings and four pence in hard cash, pay over to them the whole of the Government appropriation, and give them a monthly publication costing two shillings and six pence per annum into the bargain; and moreover, they expect said five shilling payments to make them members of the Provincial Association!!! Very modest truly; where would the County Society be? its noble would soon be brought to nine pence and its nine pence to nothing. And supposing the Society to consist of 400 members, an annual loss would be sustained of just so many ten pences, and from whence are they to come, and how are the intentions of the Legislature to be carried out? how are improved breeds of stock to be brought into the country, seeds and other things to be imported, besides an expenditure in Annual Exhibitions, &c. &c.?

We do hope our Murray friends will at once perceive what a farcical affair it would be if such measures were adopted; they will see how absolutely necessary it is that they should cease to desire to be so ubiquitous, and make their election at once, either of the saddle or the spring seat, "fast and loose" is not always a safe game to play, or if safe it is too frequently dishonourable.

Really the creed of some persons seems to be, that union is weakness, that strength consists in the minutest division of parts, in the disintegration of masses, and the absence of cohesion. That no wisdom arises out of united counsel, and that it is folly to be advised; that a minimum is preferable to a maxium, if good; and that exertions to be most beneficial must be subdivided infinitesmally.

If such ideas be really correct, then, button up your pockets to a man, let each be and constitute himself a Society, be his own Subscriber, President, Treasurer and Secretary; call a meeting of the whole; carry his measures nem. con.; carry his five shilling (with a full report) to the District Treasurer, and double his proceeds; he may then proceed to invest his capital in stock, and as his purchases must necessarily be on *rather* a limited scale, we would advise his importing a yoke of the Industrious Fleas, the freight for which would be trifling—the duty less—as they might be conveyed in a pill box, and the exhibition might take place on the very smallest denomination of silver coin, a penny.

Miscellaneous.

GO FORWARD!

Go forward!—'tis folly behind to be glancing,
We cannot recover the days that are past:
The future our joys will, perchance, be enhancing,
Tho' dark clouds of care o'er the present are cast.
There is never a night but there comes a to-morrow,
There is never a cloud but a sunbeam succeeds;
We should feel not the balm, if we knew not the sorrow—
Go forward!—the RIGHT PATH to happiness leads.

Go forward!—the future MUST yield to the power
That justice, and goodness, and truth can convey;
The base and the false may succeed for the hour,
But reason, at last, will but honour obey!
True courage consists but in facing a danger:
Ne'er harbour injustice by word or in deed;
As you'd be to a friend, be the same to a stranger—
Go forward and HOPE,—you'll be sure to succeed!

A SLEEPY FARMER.

A worthy Northumberland farmer left home the other Saturday for Newcastle market, on the day of the rent dinner; and Peggy the maid, who was also coming, received strict orders from her mistress to see him in the train at night.—Peggy was true to her trust; she saw her master into a second-class carriage, and then got into a third-class carriage herself. On her arrival at the station she alighted, and proceeded on foot to the farm. "Well, Peggy, where's your master?" asked the dame; "did you see him into the train?" "Yes, Ma'am," replied Peggy. "Then where is he?" continued her mistress; "did you see him get out?" "No, Ma'am," rejoined the literal maid; "you didn't tell me to do that." "Stupid!" exclaimed the farmer's wife; he'll have gone on with the train." And so he had! He went forward to the next station, and would have gone on to the very terminus of the line, but the guard, popping his lantern into the carriage, saw him snoozing in a corner, and rousing him up, cried,—"Hollo! Mr.——? where are you going to?" "To ——," said the farmer. "To ——!" echoed the guard; "why, you've got to ——!" Our hero started at the announcement; and his friend of the lantern, assisting him to descend, transferred him to the mail train, which just then came up from the opposite direction. Manful was the struggle which he made to keep awake until the train arrived at ——; but his potent enemy, sleep, came off conqueror. He awoke no more until a voice resounded in his ear, "Hollo! Mr. ——, what's brought you back to Newcastle?" He thought it was a dream; it must be the reverberation of the cry which awoke him at ——. But no! it was a waking reality. He had got back to Newcastle again, and the news of his return reached his brother tenants before they had broken up from the rent dinner! He made no further trial that night of the rail, but came to the resolution that he would not go home till morning.—*Gateshead Observer.*

KILLING A BUFFALO.—No animal requires so much killing as a buffalo. Unless shot through the lungs or spine, it invariably escapes; and, even when thus mortally wounded, or even struck through the very heart, it will frequently run a considerable distance before falling to the ground, particularly if it sees the hunter after the wound is given. If, however, he keeps himself concealed after firing, the animal will remain still, if it does not immediately fall. It is a most painful sight to witness the dying struggles of the huge beast. The buffalo invariably evinces the greatest repugnance to lie down when mortally wounded, apparently conscious that, when once touching mother earth, there is no hope left him. A bull, shot through the heart or lungs, with blood streaming from his mouth, and protruding tongue, his eyes rolling, bloodshot, and glazed with death, braces himself on his legs, swaying from side to side, stamps impatiently at his growing weakness, or lifts his rugged and matted head, and helplessly bellows out his conscious impotence. To the last, however, he endeavours to stand upright, and plants his limbs farther apart, but to no purpose. As the body rolls like a ship at sea, his head slowly turns from side to side, looking about as it were, for the unseen and treacherous enemy who has brought him, the lord of the plains, to such a pass. Gouts of purple blood spurt from his mouth and nostrils, and gradually the failing limbs refuse longer to support the ponderous carcase: more heavily rolls the body, from side to side, until suddenly, for a brief instant, it becomes rigid and still; a convulsive tremor seizes it, and with a low, sobbing gasp, the huge animal falls over on his side, the limbs extended stark and stiff, and the mountain of flesh without life or motion.—*Adventures in the Rocky Mountains.*

FUNGI IN SILK.—A manufacturer of silks, having received from his dyer a large quantity of goods in a spotty condition, threatened him with an action, unless he was compensated for the loss he was likely to sustain, owing, as it appeared, to the dyer's carelessness. This being resisted, chemists were employed to detect the cause of the accident; but they were at fault, until at length one gentleman to whom the damaged silk had been committed for analysis, thought of submitting it to a microscopic examination, which was undertaken by an eminent naturalist, who at once discovered that the spots were owing to a peculiar fungus, having all the characters of that variety which was detected in the potato disease. The result was, the discovery that all the damage had been effected by the manufacturer and not the dyer, he having employed in the process of manufacture a starch size which had been prepared from diseased potatoes.—*Art Union Journal.*

A YOUNG GOOSE.—A market girl sold a gentleman a fine fat goose, warranting it to be young. It turned out to be unmanageably tough. The next day the gentleman said to the market girl, "That goose which you sold me for a young one was very old." "Certainly not," said the girl; don't you call me young? "Yes." "Well, I am but nineteen, and I have heard mother say often that the goose was six weeks younger than me."—*Boston paper.*

FATAL ENCOUNTER WITH A RATTLE SNAKE.—The N. Y. *Herald* records the death of Dr. A. F. Wainewright, of 41, Crosby-street, of that city, occasioned by the bite of a rattlesnake. The snake was sent him by a friend in Mobile, Alabama. It was a large animal, about five feet in length, having 12 rattles; it was contained in a box with spars over the top. The doctor was on his way home from the ship with the present, but stopped at the Broadway-house to show the curiosity. The company present seemed to enjoy the sight of teasing and irritating the snake, while the reptile kept whizzing its rattle at a furious rate. The box was opened, and now there being a fair field the reptile kept coiling and rearing itself in fierce defiance to its enemies; this display lasted for some time, when Dr. Wainewright touched it a few inches below the head, expecting that it could not bend its body sufficiently to bite. In a moment it snapped, and inflicted a wound on the first joint of the middle finger of the right hand. This occurred at half-past six o'clock P. M. on Thursday. Dr. Smith made a superficial incision of the part, and also canterized it with nitrate of sulphur. He also applied a ligature immediately above the wrist. The hand commenced to swell immediately after the occurrence of the accident. An application of turpentine to the wound was then ordered, as also the internal administration of diffusible stimulants. Although the disease progressed rapidly in its course to the forearm and arm, no constitutional symptoms seem to have made their appearance until it reached the "axilla," or armpit, when immediately the pulse began to flag, and notwithstanding the continued application of stimulants by the mouth, and also in other forms, the pulse never rallied until about 12 oclock p. m., when death put a period to his existence. Dr. Wainewright was a physician of eminent standing, of high professional reputation in medical, literary, and scientific acquirements; he was once a captain in the 50th Regt. of Foot, British service.

When the oak puts forth its leaf before the ash, a dry summer may be expected; but when the ash precedes the oak, then a wet one.—*Old Proverb.*

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